



STORMWATER MANAGEMENT PERMIT APPLICATION FORM  
401 CERTIFICATION APPLICATION FORM

**CONTECH** STORMFILTER SUPPLEMENT  
ENGINEERED SOLUTIONS

This form must be filled out on line, printed and submitted with all of the required information.  
Make sure to also fill out and submit the Required Items Checklist (Section III) and the I&M Agreement (Section IV)

**I. PROJECT INFORMATION**

Project name	Hotel Indigo
Contact name	Howard Resnik
Phone number	910-791-4441
Date	October 30, 2012
Drainage area number	1

**II. DESIGN INFORMATION**

**Site Characteristics**

Drainage area ( $A_D$ )	51,772.00 $\text{ft}^2$	✓	OK
Impervious area	48,508.00 $\text{ft}^2$	✓	
% Impervious ( $I_A$ )	93.7% %	✓	
Design rainfall depth ( $R_D$ )	1.50 in	✓	

**Peak Flow Calculations**

1-yr, 24-hr runoff depth	3.83 in	✓	
1-yr, 24-hr intensity	0.16 in/hr		
Pre-development 1-yr, 24-hr runoff	827.00 $\text{ft}^3/\text{sec}$		
Post-development 1-yr, 24-hr runoff	14,724.00 $\text{ft}^3/\text{sec}$		
Pre/Post 1-yr, 24-hr peak control	13,897.00 $\text{ft}^3/\text{sec}$		

**Storage Volume**

Design volume (WQV)	13,826.00 $\text{ft}^3$	✓	13897
Adjusted water quality volume ( $WQV_{Adj}$ )	10,369.50 $\text{ft}^3$	✓	10422.25
Volume contained before filter	10,468.00 $\text{ft}^3$		
Runoff Coefficient ( $R_v$ )	0.89 (unitless)		
Pretreatment credit (estimated or calculated), %pre	30.00%		

**Mass loading calculations**

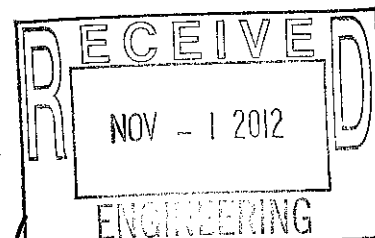
Mean Annual Rainfall, P	45.00 in	57 in	
Agency required % removal	85.00%		
Percent Runoff Capture (% capture)	98.00%		
Mean Annual Runoff, $V_i$	169953.32 $\text{ft}^3$		
Event Mean Concentration of Pollutant, EMC	70.00 mg/l		
Annual Mass Load, $M_{total}$	742.24 lbs		

**Filter System**

Cartridge height	18.00 in		
Specific Flow Rate, q	1.00 gpm/ $\text{ft}^2$		
SHWT elevation	13.70 ft amsl		
Bottom of the StormFilter vault elevation	14.70 ft amsl		
Clearance ( $d_{SHWT}$ )	1.00		
Time to drain the StormFilter (t)	8.00 hours		Insufficient drainage time.
Time to drain the StormFilter (t)	0.33 days		

**Cartridge Quantity Calculation**

Mass removed by pretreatment system, $M_{pre}$	222.67 lbs	$=M_{total} * \% \text{removal}$
Mass load to filters after pretreatment, $M_{pass1}$	519.57 lbs	$=M_{total} - M_{pre}$
Estimate the required filter efficiency, $E_{filter}$	0.79	$=1 + (\% \text{removal} - 1) / (1 - \% \text{pre})$



How is this being determined?

Mass to be captured by filters,  $M_{filter}$   
Maximum Cartridge Flow rate,  $Q_{cart}$   
Mass load per cartridge,  $M_{cart}$  (lbs)  
Number of Cartridges required,  $N_{mass}$   
Maximum Treatment Capacity

408.23 lbs  
7.50 gpm  
36.00 lbs  
12.00  
0.20

=Mpass1 \* Efilter  
=q \* (7.5 ft2/cartridge)  
=lookup mass load per cartridge  
=ROUNDUP(Mfilter/Mcart,0)  
=Nmass\*(Qcart/449)

#### SUMMARY

Maximum Treatment Flow Rate, cfs  
Cartridge Flow Rate, gpm  
Number of Cartridges

0.20  
7.50  
12.00

#### Additional Information

Does volume in excess of the design volume bypass the filter?  
Is an off-line flow-splitting device used?  
If draining to SA waters: Does volume in excess of the design volume flow evenly distributed through a vegetated filter?  
What is the length of the vegetated filter?  
Does the design use a level spreader to evenly distribute flow?  
Is the BMP located at least 30ft from surface waters (50ft if SA waters)?  
If not a closed bottom, is BMP located at least 100ft from water supply wells?  
Are the vegetated side slopes equal to or less than 3:1  
Is the BMP located in a recorded drainage easement with a recorded access easement to a public Right of Way (ROW)?

y Y or N OK  
y Y or N OK  
n Y or N Excess volume must pass through filter.  
ft  
Y or N  
y Y or N OK  
y Y or N OK  
y Y or N OK  
y Y or N OK